

## PATENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY REPORT ON PATENT ~~W~~ABILITY



PCT

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference PCT04005	<b>FOR FURTHER ACTION</b>		See Form PCT/IPEA/416
International application No. <b>PCT/KR2004/001917</b>	International filing date(day/month/year) <b>29 JULY 2004 (29.07.2004)</b>	Priority date (day/month/year) 29 JULY 2003 (29.07.2003)	
International Patent Classification (IPC) or national classification and IPC  <b>IPC7 G01S 11/14</b>			
Applicant  <b>AN, Heui Tay et al</b>			

- This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
- This REPORT consists of a total of 3 sheets, including this cover sheet.
- This report is also accompanied by ANNEXES, comprising:
  - ☐ (sent to the applicant and to the International Bureau) a total of \_\_\_\_\_ sheets, as follows:
    - ☐ sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).
    - ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.
  - ☐ (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) \_\_\_\_\_ containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box relating to Sequence Listing (see Section 802 of the Administrative Instructions).
- This report contains indications relating to the following items:
  - ☒ Box No. I Basis of the report
  - ☐ Box No. II Priority
  - ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
  - ☐ Box No. IV Lack of unity of invention
  - ☒ Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
  - ☐ Box No. VI Certain documents cited
  - ☐ Box No. VII Certain defects in the international application
  - ☐ Box No. VIII Certain observations on the international application

Date of submission of the demand  <b>02 SEPTEMBER 2004 (02.09.2004)</b>	Date of completion of this report  31 OCTOBER 2005 (31.10.2005)
Name and mailing address of the IPEA/KR  Korean Intellectual Property Office 920 Dunsan-dong, Seo-gu, Daejeon 302-701, Republic of Korea Facsimile No. 82-42-472-7140	Authorized officer  SEO, Hawthorne  Telephone No. 82-42-481-5670 

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/KR2004/001917

## Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

- ☐ This report is based on translations from the original language into the following language \_\_\_\_\_  
which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
  - ☐ publication of the international application (under Rule 12.4)
  - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the **elements** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

- ☒ the international application as originally filed/furnished

- ☐ the description:  
pages \_\_\_\_\_ as originally filed/furnished  
pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_  
pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_

- ☐ the claims:  
pages \_\_\_\_\_ as originally filed/furnished  
pages\* \_\_\_\_\_ as amended (together with any statement) under Article 19  
pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_  
pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_

- ☐ the drawings:  
pages \_\_\_\_\_ as originally filed/furnished  
pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_  
pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_

- ☐ the sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheets \_\_\_\_\_
- ☐ the sequence listing (*specify*): \_\_\_\_\_
- ☐ any table(s) related to sequence listing (*specify*): \_\_\_\_\_

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheets \_\_\_\_\_
- ☐ the sequence listing (*specify*): \_\_\_\_\_
- ☐ any table(s) related to sequence listing (*specify*): \_\_\_\_\_

\* If item 4 applies, some or all of those sheets may be marked "superseded."

# INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/KR2004/001917

## Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

### 1. Statement

Novelty (N)	Claims	1-7	YES
	Claims	None	NO
Inventive step (IS)	Claims	7	YES
	Claims	1-6	NO
Industrial applicability (IA)	Claims	1-7	YES
	Claims	None	NO

### 2. Citations and explanations (Rule 70.7)

The following documents were referred to:

D1 US 5,197,019 A

D2 JP 8-94740 A

The present invention relates to a distance measurement method and device using ultrasonic waves. The present invention includes amplifying a received ultrasonic wave signal and separating a specific frequency from an ultrasonic wave signal mixed with an unnecessary signal to extract an arrival signal of a first pulse.

D1 discloses a method for measuring the distance employing the ultrasonic wave diffused back by said faces and received by a sensor. After the digitalization, the temporal signal is transformed into a frequency spectrum. Following the suppression of the linear signal, the useful signal is applied to a frequency window in order to eliminate the noise therefrom. The signal thus obtained is inversely transformed to obtain a signal of which the amplitude is a function of the time and the envelope of this latter signal is determined. The distance 'e' is calculated from the relation  $e = cx \Delta t / 2$ .

D2 discloses an ultrasonic-wave transmitting/receiving means which comprises a transmitting-pulse generator 1 and a transceiver 2. An A/D converter 4 converts the received signal C from the transceiver 2 into the digital signal D and outputs the signal into a microcomputer 5. A counter circuit 3 counts the time from the transmission of the ultrasonic wave to the reception of the reflected wave exceeding a constant threshold value.

By the way, the technical features of D1 and D2 above seem to suggest similarities to those of the present invention in that D1 has a technical feature of transmitting/receiving pulses and applying the useful signal to a frequency window in order to eliminate the noise, and that D2 has a technical feature of an A/D converter 4 converting the received signal C from the transceiver 2 into the digital signal D, outputting the signal into a microcomputer 5, and counter circuit 3 counting the time from the transmission of the ultrasonic wave to the reception of the reflected wave exceeding a constant threshold value.

Accordingly, it would be obvious to a person skilled in the art to render out the present distance measurement method and device using ultrasonic waves without any difficulty, by combining the technical features referred to in D1, and D2.

Consequently, the characterizing features of the claims 1-6 of the present invention are considered not to involve an inventive step under PCT Article 33(3).

The claims 1-7 in the present invention are considered novel and industrially applicable under PCT Article 33(2) and 33(4).